

REMARKS

Applicants wish to thank the Examiner for conducting the Examiner's interview.

Amendments to claims 1, 10, 12, and 25 are for the purpose of clarifying what Applicants regard as the invention. Amendment to claim 34 is to incorporate a claim limitation from former claim 35. No new matter has been added.

I. CLAIM OBJECTIONS UNDER 35 U.S.C. § 112

Claims 1-10 stand objected under 35 U.S.C. 112. Claims 1 and 10 have been amended to remove the alleged deficiencies raised in the Office Action.

Claims 29, 30, and 37-39 stand objected to for the specification allegedly failed to teach how to acquire multiple images in a physiological cycle. Claims 29 and 30 have been canceled. With respect to claims 37-39, Applicants respectfully submit that techniques for acquiring multiple images in a physiological cycle are known in the art, and that those skilled in the art know how to perform such step in view of the specification. For example, page 7 of the specification describes an apparatus 20 that can be used to take a plurality of images while at least a portion of a patient is undergoing a physiological cycle.

II. CLAIM REJECTIONS UNDER 35 U.S.C. § 102/103

Claims 1-7, 9, 10, 12-19, 22-30, and 34-39 stand rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,307,914 (Kunieda). Applicants respectfully note that in order to sustain a rejection under §102, each element in the rejected claim must be found, either expressly or inherently, in the cited reference.

Claims 1-10

Claims 1 and 10 have been amended in accordance with the Examiner's recommendation to each recite establishing a relationship of the at least one marker relative to the target by *measuring* a relative position between the at least one marker and the target. According to the Examiner in the Examiner's interview, the limitation "measuring" clarifies the distinction over Kunieda. As such, amended claims 1 and 10, and their respective dependent claims, are believed allowable over Kunieda.

Claims 12-20

Claim 12 has been amended to recite a control module for generating a beam adjustment signal for controlling said first multiple leaf collimator to track a movement of the target, and generating a control signal to switching off said radiation source *in conjunction with* generating the beam adjustment signal. Applicants agree with the Examiner that Kunieda does not disclose or suggest tracking a movement of a target and switching off a radiation source in approximately the same time. As such amended claims 12-20 are believed allowable over Kunieda.

Claims 22-28

Claim 25 recites adjusting *a shape* of a radiation beam. Kunieda does not disclose or suggest such limitation. According to the Office Action, column 16, lines 25-37 of Kunieda discloses the above limitation. However, the cited passage actually discloses:

In the above embodiment 1, on/off control of the medical treatment beam 16 of the linac 15 is performed by obtained three-dimensional coordinates of the tumor marker 17. However, as shown in FIG. 20, if the moving body pursuit irradiating device is constructed such that the multi-leaf collimator 15a is opened and closed by the multi-leaf collimator control section 35 by performing an inverse operation from a moving amount of the tumor marker 17 and an irradiating field is dynamically controlled, the position of a tumor can be set to an irradiating object of the medical treatment beam at any time. Accordingly, unnecessary exposure due to a fluoroscope is restrained and a medical treatment time can be shortened.

As such, the cited passage does not disclose or suggest adjusting a shape of a radiation beam, as recited in claim 25. Also according to the Office Action, the term “inverse operation” refers to opening one side of a collimator while closing another side of the collimator to maintain a tumor centered in a beam. However, even under this interpretation, all of the collimator leafs would move such that the same beam shape is maintained. For at least the foregoing reason, claim 25 and its dependent claims 22-24 and 26-28 are believed allowable over Kunieda.

Claims 34, 40, and 41

Claim 34 has been amended in accordance with the Examiner’s recommendation to recite using *an internal anatomy* of a patient as a marker. The Examiner has indicated that such amendment distinguishes over Kunieda. As such, claim 34 and its dependent claims are believed allowable over Kunieda.

Claims 37-39

In the Examiner’s interview, the Examiner indicated that claim 37-39 appear to be allowable over Kunieda because Kunieda does not disclose or suggest “physiological cycle.”

Claims 42-49

Applicants respectfully submit that claims 42-47 are allowable over Kunieda because Kunieda does not disclose or suggest performing an intensity modulated radiation therapy on a target region, and tracking a movement of the target region while the intensity modulated radiation therapy is being performed.

III. INFORMATION DISCLOSURE STATEMENTS

Applicants wish to bring to the attention of the Patent Office the references listed on the two attached IDS', which were previously submitted on March 4, 2003 (please note that only the second page of form PTO/SB/08A has not been considered; the first page of form PTO/SB/08A has already been considered), and March 17, 2003, and requests that they be considered and initialed by the Examiner.

CONCLUSION


Based on the foregoing, all remaining claims are believed in condition for allowance. If the Examiner has any questions or comments regarding this amendment, please contact the undersigned at the number listed below.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Bingham McCutchen's Deposit Account No. 50-2518, referencing billing number 7012072001. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Bingham McCutchen's Deposit Account No. 50-2518, referencing billing number 7012072001.

Respectfully submitted,

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Enclosures: Copies of previously submitted IDS'